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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,735	03/18/2004	Yutaka Takafuji	1035-501	5007
23117	7590	09/20/2005	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			TRAN, THIEN F	
			ART UNIT	PAPER NUMBER
			2811	
DATE MAILED: 09/20/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/802,735

Applicant(s)

TAKAFUJI ET AL.

Examiner

Thien F. Tran

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17-32 and 43-53 is/are pending in the application.
- 4a) Of the above claim(s) 6-8, 11, 17-32 and 43-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 12-15, 51 and 52 is/are rejected.
- 7) ☒ Claim(s) 9, 10 and 53 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election without traverse of Group I including claims 1-5, 9, 10, 12-15 and 51-53 in the reply filed on 07/05/2005 is acknowledged.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 51 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasukawa (JP 2001-255559).

Yasukawa discloses the claimed semiconductor device (Figs 4-8) comprising an insulating substrate 10 having a surface on which a first SiO<sub>2</sub> film 12 is formed; and a single crystal silicon thin film (210e, 401) bonded with the insulating substrate on a partial region of the insulating substrate, wherein the single crystal silicon thin film 401 has a substantially uniform thickness and has a surface substantially free of damage, the single crystal silicon thin film has bonded thereto a second SiO<sub>2</sub> film 210b, and the surface of the insulating substrate, where the first SiO<sub>2</sub> film is formed, is bonded with the single crystal silicon thin film, where the second SiO<sub>2</sub> film is formed.

Regarding claim 2, in different regions on the insulating substrate, the single crystal silicon thin film (210e, 401) and a non-single crystal silicon thin film (210d, 1a) are provided.

Regarding claim 3, the single crystal silicon thin film 210e has a thickness of 55nm.

Regarding claim 5, the non single crystal silicon thin film (210d, 1a) is polycrystalline silicon.

Regarding claim 52, transistor elements are formed from the single crystal silicon thin film

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasukawa (JP 2001-255559).

Yasukawa as described above does not specifically disclose the single crystal silicon thin film 210e having a thickness of not more than about 20 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the thickness of the single crystal silicon thin film having the claimed range of thickness to reduce the device size as small as possible, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasukawa (JP 2001-255559) in view of Yale (EP 0 559 389).

Yasukawa as described above does not explicitly disclose the insulating substrate being a high-strain-point glass including an alkaline earth alumino borosilicate glass. Yale discloses a high-strain-point glass as a material for a substrate in liquid crystal display devices. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the glass substrate of Yasukawa of the high-strain-point glass disclosed by Yale in order to provide a glass substrate capable of withstanding elevated temperatures and improving the resistance of the glass to chemical attack by reagents.

Regarding claim 13, Yale discloses the insulating substrate being made of barium-alumino borosilicate glass.

Regarding claim 14, Yasukawa in view of Yale disclose the same structure as claimed wherein the insulating substrate and the single crystal silicon thin film have the same materials as those used in the instant invention. Therefore, it is inherent that the structure of Yasukawa in view of Yale provides the same characteristics as claimed wherein a difference of linear expansion between the insulating substrate and the single crystal silicon thin film is about not more than 250 ppm at temperatures in a range between substantially room temperature and 600°C.

Regarding claim 15, the insulating substrate as taught by Yale has the same materials as the material used for the insulating substrate in the instant invention. These

materials for the insulating substrate are inherently high-strain-point glasses whose strain point is not less than 500°C.

***Allowable Subject Matter***

Claims 9, 10 and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: prior art references do not teach or render obvious a semiconductor device having the structure arrangement as recited in claims 1 and 9 wherein a transistor is arranged from an insulating substrate side in the order as claimed.

Prior art references do not teach or render obvious a semiconductor device having the structure arrangement as recited in claims 51 and 53 wherein transistor elements are arranged from an insulating substrate side in the order as claimed.

***Response to Arguments***

Applicant's arguments with respect to claims 1-5, 12-15 and 51-52 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien F. Tran whose telephone number is (571) 272-1665. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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tt  
September 16, 2005

*Thien Tran*  
**THIEN TRAN**  
**PRIMARY EXAMINER**